TOPOLOGICAL INVARIANTS OF MODULAR FUSION CATEGORIES

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Abstract: Fusion categories constructed from the data comprising of a finite group G and a 3-cocycle with values in U(1) (aka pointed fusion categories) form a large class of accessible examples. Establishing categorical Morita equivalence of such categories reduces to comparing their Drinfeld centers, which are modular categories. Classical invariants associated to modular categories (the S-matrix and the T-matrix) were found to be insufficient to distinguish between inequivalent Drinfeld centers of pointed fusion categories, and consequently, between categorically Morita-inequivalent pointed fusion categories. In general, invariants of modular categories have a well-known topological interpretation in terms of link invariants in 3-space, which we exploit to distinguish certain pointed categories that cannot be distinguished by classical invariants alone.